

## CONTENTS

Subject	Page
I. INTRODCUTION	1
II. REVIEW OF LITERATURE	3
II.1. Breeding methodology	3
II.2. Selection criteria.	12
II.3. Heritability and genetic advance	14
II.4. Chemical analysis	19
III. MATERIALS AND METHODS	23
IV. RESULTS AND DISCUSSION	31
4.1. First cross (Forrest x H <sub>2</sub> L <sub>20</sub> )	31
4.1.1. F <sub>3</sub> generation	31
4.1.2. F <sub>4</sub> generation	34
4.1.3. F <sub>5</sub> generation	40
4.1.3.1. Comparison between three selection methods	40
4.1.3.2. Direct and indirect selection	46
4.2. Second cross (L-86k-73 x H <sub>2</sub> L <sub>20</sub> )	54
4.2.1. F <sub>3</sub> generation	54
4.2.2. F <sub>4</sub> generation	57
4.2.3. F <sub>5</sub> generation	61
4.2.3.1. Comparison between three selection methods	61
4.2.3.2. Direct and indirect selection	68
4.3. Oil and protein percentage	75
V. SUMMARY	79
VI. REFERENCES	87
VII. ARABIC SUMMARY	

## LIST OF TABLES

Table No.	Title	Page
1	The origin and pedigree of the studied parental genotypes.	24
2	Mean squares of the $F_3$ families for the five studied traits in the first cross (Forrest x $H_2L_{20}$ ).	32
3	Mean performance of the selected $F_3$ families, two parents and genetic parameters (heritability, genetic coefficient. of variation and genetic gain) in the first cross.	33
4	Mean squares of the $F_4$ families for the five studied traits in the first cross (Forrest x $H_2L_{20}$ ).	35
5	Mean performance of the selected $F_4$ families, two check varieties, heritability genetic coefficient of variation and genetic gain in the first cross.	36
6	Mean squares of the breeding methods for the five studied traits in the first cross (Forrest x $H_2L_{20}$ ).	41
7	Mean performance of the breeding methods of the $F_5$ families for the five studied traits in the first cross (Forrest x $H_2L_{20}$ ).	42
8	Mean squares of the breeding methods and both parents for the five studied traits in the first cross (Forrest x $H_2L_{20}$ ).	44
9	Mean performance of the selected lines of breeding methods and two parents and check variety in the first cross.	45
10	Mean squares of four selection criteria and lines/selection criteria in the first cross ( $F_5$ -lines).	47
11	Mane values of the four selection criteria in the first cross.	49
12	Mean performance of the $F_5$ selected lines from direct and indirect selection two parents and check variety in the first cross.	51
13	Mean squares of the $F_3$ families for the five traits in the second cross (L-86K-73 x $H_2L_{20}$ ).	55

Table No.	Title	Page
14	Mean performance of the selected F <sub>3</sub> families in the second cross (L-86K-73 x H <sub>2</sub> L <sub>20</sub> ), two parent varieties, heritability, genetic coefficient of variation and genetic advance.	56
15	Mean squares of the F <sub>4</sub> families for the five studied traits in the second cross (L-86K-73 x H <sub>2</sub> L <sub>20</sub> ).	58
16	Mean performance of the selected F <sub>4</sub> families in the second cross, two parent varieties, heritability, genetic coefficient of variation and genetic advance.	59
17	Mean squares of the breeding methods for the five studies traits in the second cross (L-86K-73 x H <sub>2</sub> L <sub>20</sub> ).	62
18	Mean performances of the breeding methods for the five studied traits in the second cross (L-86K-73 x H <sub>2</sub> L <sub>20</sub> ).	63
19	Mean squares of the breeding methods and both parents (F <sub>5</sub> -lines) for the five studied traits in the second cross (L-86K-73 x H <sub>2</sub> L <sub>20</sub> ).	65
20	Mean performance of the selected lines of breeding methods and two parents and check variety in the second cross (L-86K-73 x H <sub>2</sub> L <sub>20</sub> ).	66
21	Mean squares of four selection criteria and lines/selection criteria in the second cross (L-86K-73 x H <sub>2</sub> L <sub>20</sub> ).	69
22	Mane values of the four selection criteria in the second cross (L-86K-73 x H <sub>2</sub> L <sub>20</sub> ).	70
23	Mean performance of the F <sub>5</sub> selected lines from direct and indirect selection two parents and check variety in the second cross.	73
24	Oil and protein percentage of the selected lines of breeding methods and two parents in the first cross (forrest x H <sub>2</sub> L <sub>20</sub> ) and the second cross (L-86K-73 x H <sub>2</sub> L <sub>20</sub> ).	77